

SF attenuation length measurement

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Purpose

- Determine if the attenuation length of the scintillating fibers is significant
 - Are we losing photons or photoelectrons at the far end?
 - Does the SF plane efficiency change?

Goal

- Prove that we do not have to consider signal attenuation in the SF fibers.

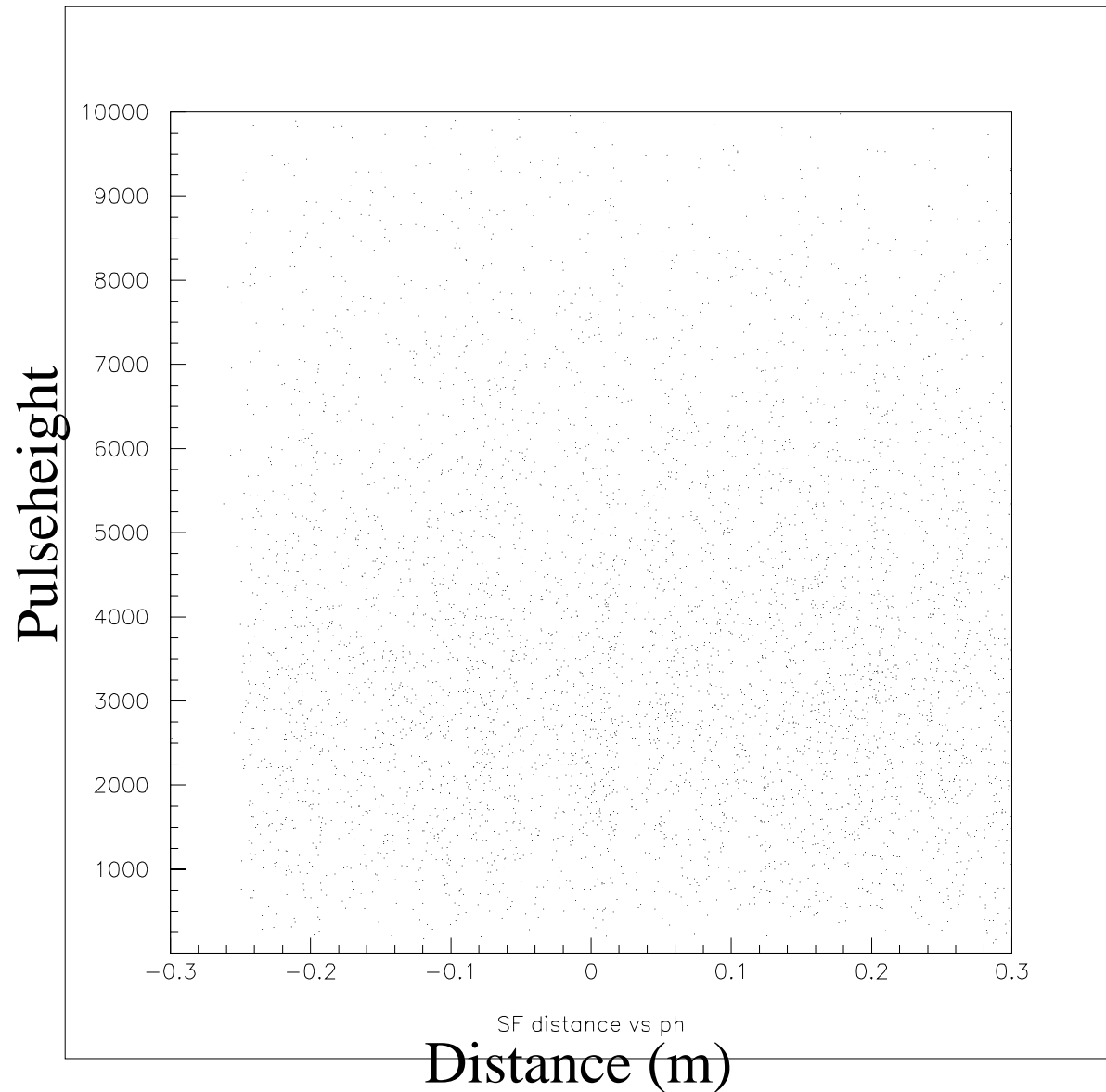
Method

- Use reconstructed 3-d muon tracks to define a U-V position for each track hit.
 - Single tracks from a muon file
 - new SF decoder to obtain normalized, meaningful pulseheight information
- Plot U position versus pulseheight
- Plot V position versus pulseheight

Results for attenuation length:

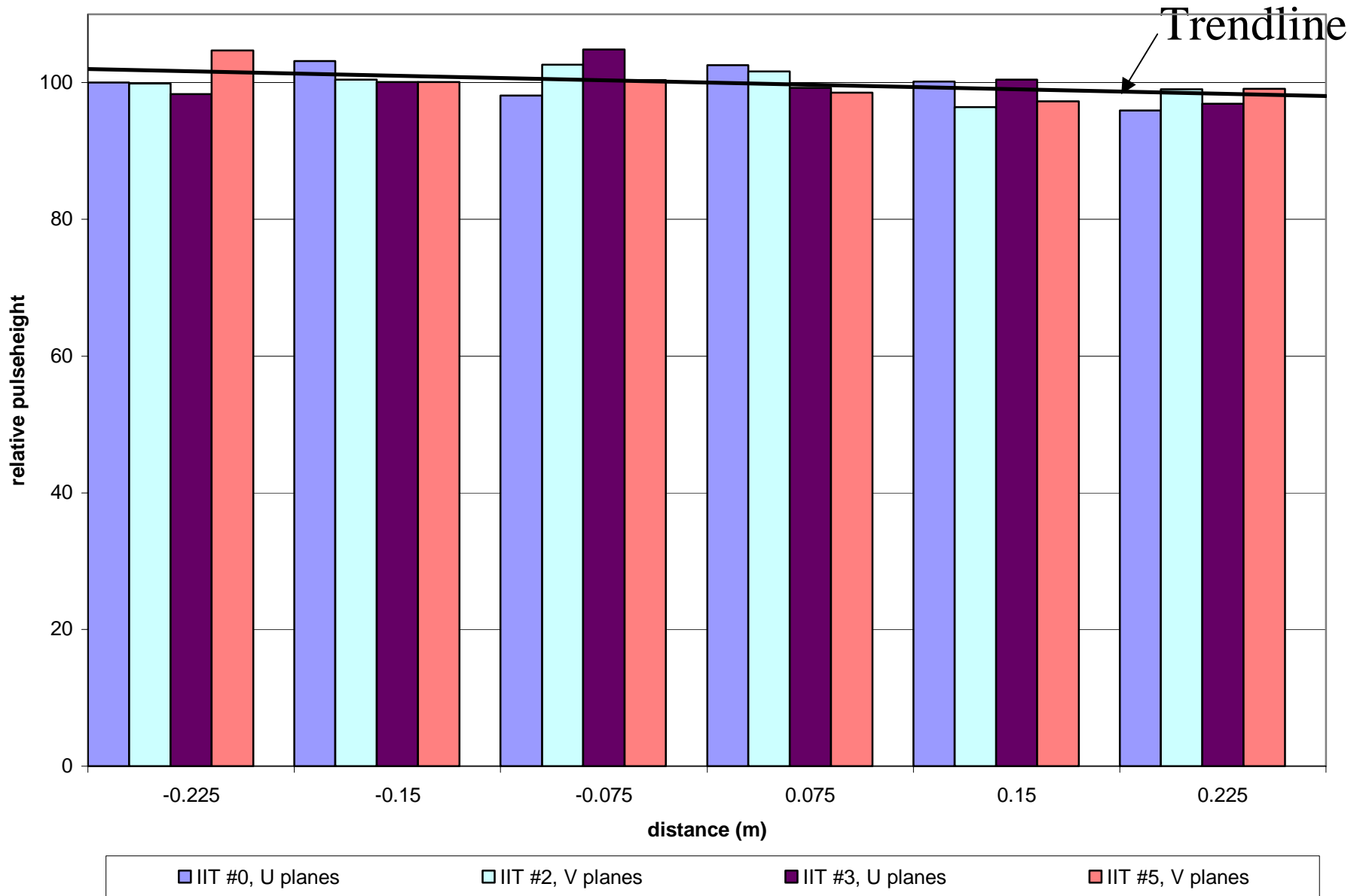
- Plot of distance versus pulseheight for all planes connected to IIT #3
- Plot of distance versus average pulseheight for each of the four IITs that only have planes of a single view connected to it
 - 6 slices in distance
 - histogram pulseheight and find the average
 - average over all planes and plot the trendline

Distance in V versus pulseheight for all U planes connected to IIT #3



V distance versus average pulseheight

for the four IITs connected to planes of only one view



Conclusion and Outlook

- The attenuation length of the scintillating fibers is not measurable.
- I will also test the pulseheight variations for fibers within the same plane